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## 010073-12 368441 V2

1. My name is Yale M. Braunstein. I am a Professor in the School of Information at the University of California, Berkeley. My office address is 102 South Hall, Berkeley, California 94720-4600 (USA). I have been on the faculty at Berkeley for over 26 years.

2. I received a B.S. in Economics from Rensselaer Polytechnic Institute in 1966, a M.A. in Economics from Stanford University in 1968, and a Ph.D. in Economics from Stanford in 1975.

3. Prior to my appointment at Berkeley, I was an Assistant Professor of Economics at New York University and an Assistant Professor of Economics at Brandeis University. At Berkeley I also hold an appointment as an affiliated faculty member with the Health Services and Policy Analysis program.

4. I have taught several courses relevant to the issues in this case. They include economics courses at several levels, financial management, economics of information, information policy, a specialized elective on “Telecommunications and Information Industries: Economics and Policy,” a freshman seminar on “Communications and Information Systems-Structures and Policies,” and a course on “Realizing Digital Convergence,” offered jointly by Berkeley and the Center for Digital Technology and Management of Ludwig Maximilians University and the Technical University of Munich.

5. I have served as a consultant to the U.S. Federal Communications Commission, the National Telecommunications and Information Administration of the U.S. Department of Commerce, the Internal Revenue Service, the Department of Communications of the State of Israel, Post-och Telestyrelsen (the Swedish National Post and Telecom Agency), the Canadian Radio-Television and Telecommunications Commission (CRTC), and other departments of the Canadian government. I have also consulted for telecommunications carriers, both in the United States and internationally, and for international organizations. I have provided expert testimony in court or before

regulatory bodies in Canada, Ireland, and the United States. A partial list of these activities is attached as Appendix A.

6. I have authored or co-authored over 50 articles and reports in the fields of economics, information science, and policy. My articles have appeared in *Antitrust Bulletin*, *Federal Communications Law Journal*, *Journal of the American Society for Information Science*, *Journal of Political Economy*, *Review of Economics and Statistics*, and other scholarly journals. I have made numerous presentations at conferences, and I have been a visiting scholar or guest professor at research institutes and universities in the Asia/Pacific region and in Europe. My recent resume with a list of publications is attached as Appendix B.

## **I. PURPOSE OF THIS DECLARATION**

7. The purpose of this declaration is to distinguish between the meaning of “rates” and of other terms and conditions. I shall focus on the economic use of the concept of a rate, specifically as part of a schedule of tariffs, the amounts charged for telecommunications services. I shall show that the accepted approaches to thinking about rates do not include other terms and conditions such as late-payment fees and service reconnection fees as rates. As used in economics, I find that rates are the pricing components, or “tariffs,” that are associated with the services provided to consumers as they acquire or use the output of the producing firm, in this case the mobile telephone service provider or “carrier.” This distinction between rates and other charges, such as those for late fees or service resumption, is common in economics. One-the rate-is associated with the provision of service to the consumer and is the basis for economic decisions about what to purchase, how much to consume, and how to compare the offerings of one carrier with those of another. On the other hand, fees for late payment or for resumption of service are not charged for the delivery of the carrier’s services. Furthermore, these additional fees are not widely disclosed and generally are not part of

the comparative processes current or potential consumers undertake in making their purchasing decisions.

8. This distinction between rates charged for mobile telephone services and other fees and conditions is a situation where the economics directly parallels the statutory law. Section 332(c) of the *Federal Communications Act* reads, in part:

No State or local government shall have any authority to regulate the entry of or the rates charged by any commercial mobile service or any private mobile service, except that this paragraph shall not prohibit a State from regulating the other terms and conditions of commercial mobile service.<sup>1</sup>

9. While one could imagine an alternative wording that would have stated that “rates do include other terms and conditions” or “all elements associated with commercial telephone service that are denominated in dollars and cents shall be considered rates,” that is explicitly not the approach taken in the *Act*.

10. The remainder of this report focuses on the economic logic relating to the definition of rates and covers four areas: (a) wireless pricing plans as advertised to consumers, (b) international pricing comparisons, (c) pricing comparisons across platforms, and (d) rates and prices used in econometric studies. In each area I find that the economic logic requires that one distinguish between the rates associate with mobile telephone service and the charges for late payments, service reconnections, and related items.

## **II. WIRELESS PRICING PLANS**

11. First, let us look at the pricing plans for wireless telecommunications services as presented to consumers. Exhibit 1 shows the rates for voice services for the nationwide single-line voices plans offered by Verizon Wireless as presented on its webpage.

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<sup>1</sup> 47 U.S.C. Sec. 332(c)(3)(A).

Exhibit 1: Verizon Wireless Nationwide Single-Line Plans

Anytime Minutes	Talk & Text monthly access	Talk monthly access	Friends & Family	Per-Minute Rate After Allowance
450	\$59.99	\$39.99	—	45¢
900	\$79.99	\$59.99	Pick 5 Friends	40¢
Unlimited	\$89.99	\$69.99	—	—

Data Packages

Device Type	Monthly Access Per Line	Data Allowance Per-MB	Rate
Feature Phones	—	Pay per use	\$1.99
Feature or 3G Multimedia Phones	\$9.99	25 MB	20¢ after allowance
Feature, 3G Multimedia or 3G Smartphones	\$29.99	Unlimited	—

Source:

<http://www.verizonwireless.com/b2c/splash/plansingleline.jsp?lid=//global//plans//individual> (accessed April 25, 2010)

12. These rates as shown in Exhibit 1 are accompanied by footnotes relating to specific services (text messaging, etc.) and their prices. There is also a general statement that “Activation fees, taxes & other charges apply.” But nowhere is the consumer presented with a schedule of charges such as late-payment fees, service reconnection fees, or similar items. There is no link to these fees or to a more general “terms and conditions” page.

13. There is, however, a link to a general “Customer Agreement” webpage. That page contains a statement about mid-way through which states:

About My Payments

If we don’t get your payment on time, we will charge you a late fee of up to 1.5 percent per month (18 percent per year) on the unpaid balance, or a flat \$5 per month, whichever is greater, if allowed by law in the state of your billing address. (If you choose another company to bill you for our Service [such as another Verizon company], late fees are set by that company or by its tariffs and may be higher than our late fees.) If we use a collection agency to collect from you, we may charge you for any fees the collection

agency charges us, if allowed by law in the state of your billing address when we first send your account to a collection agency. We may require a deposit at the time of activation or afterward, or an increased deposit. We'll pay simple interest on any deposit at the rate the law requires. We may apply deposits or payments in any order to any amounts you owe us on any account. If your final credit balance is less than \$1, we will refund it only if you ask. We may charge you up to \$25 for any returned check. You may have to pay a fee to activate Service or to reconnect Service if it is interrupted for non-payment or suspended for any reason.

Source:

[http://www.verizonwireless.com/b2c/globalText?textName=CUSTOMER\\_AGREEMENT&jspName=footer/customerAgreement.jsp](http://www.verizonwireless.com/b2c/globalText?textName=CUSTOMER_AGREEMENT&jspName=footer/customerAgreement.jsp) (accessed April 25, 2010) [*Emphasis added*]

14. It is important to note that even here the exact amount of the service reconnection fee is not stated. Similarly, a consumer who found this section might assume that the late fee will be the maximum allowed (1.5% per month or \$5 per month, whichever is greater), if he or she knew what was allowed in a particular state. But it defies logic to assume that consumers base their decisions on which carrier to choose based on the levels of these specific fees, given the lack of useful disclosure.

15. The approach used by AT&T Mobility to describe its rate plans is somewhat different but the conclusion is the same: The fees for late payment and service reconnection are not easily found and are not assumed to be part of the consumer's decision-making process. AT&T has three nation-wide calling plans (plus an additional six with calls to Canada included in the basic monthly fee). These are shown in

Exhibit 2. AT&T Mobile Plans

Minutes	Monthly Cost	Rollover	Unlimited Nights/Weekends	Unlimited Mobile to Mobile
450	\$39.99	Y	Includes 5000	Y
900	\$59.99	Y	Y	Y
Unlimited	\$69.99		Y	Y

Source: [http://www.wireless.att.com/cell-phone-service/cell-phone-plans/individual-cell-phone-plans.jsp?\\_requestid=20744](http://www.wireless.att.com/cell-phone-service/cell-phone-plans/individual-cell-phone-plans.jsp?_requestid=20744) (Accessed April 25, 2010).

16. For each plan there is additional information provided under the classifications of “Rate Plan Details,” “Included Plan Features,” and “Features.” This last category provides options that can be added to the basic rate plan for an additional charge. Using the Nation 450 plan as a example, we find the following details:

- Anytime Minutes 450
- Night & Weekend minutes\* 5000
- Mobile to Mobile minutes Unlimited
- AT&T Unity Minutes Not Included
- Long Distance \$0.00
- Roaming Charges \$0.00
- Additional minutes \$.45 per minute
- Primary line one-time activation fee \$36.00
- Contract length 2 years

The Included Plan Features consist of:

- Call Forwarding
- Unlimited Mobile to Mobile Calling
- Caller ID
- Call Waiting
- Basic Voice Mail
- Conference Calling
- Long Distance

17. There are over 35 additional features available for a fee. These range from an “Early Nights and Weekends” plan that extends off-peak call pricing to enhanced voice mail options. At the end of the list there is a link to “Other Monthly Charges,” but these relate to the “regulatory cost recovery charge” and “universal service fund” fees. There is a link at the bottom of that page to “Plan Terms.” I could not find a mention of late fees or service reconnection fee. However, that page is not directly searchable, so I can not be certain that information is not provided.

18. From these examples I conclude that there is a clear distinction between two categories. On one hand, there are the rates that are associated with the components of cellular mobile telephone service and promoted to consumers to influence their decisions about which carrier to choose and which services to purchase. The other

category consists of “other terms and conditions,” including late fees and charges for service reconnection. These fees are not levied on or even disclosed to consumers as they make their purchase decisions. There is no associated “service” or “feature” that is marketed to consumers. As a result, the fees associated with the other terms and conditions should not be considered rates or prices associated with the provision of mobile telephone service.

19. This point is clearly made in Varian’s discussion of what precisely constitutes an economic good (and by extension “service”) in his microeconomics text:

A very fundamental concept of economics is the concept of a *good*. We have explicitly assumed consumers are aware of what goods are available and in fact what each good *is*. But is this really plausible for all goods?<sup>2</sup>

20. For markets to function efficiently, consumers need to understand what they are purchasing and the prices they are asked to pay. This is not the case for late fees or reconnection fees, and, therefore, this is one of the reasons states have sought to maintain oversight of them. This understanding enables us to see the incorrect logic in the statement from the “Comments of Verizon Wireless” that:

Imposing a late fee of \$5 is no different in economic terms than quoting a price of a monthly service plan of \$39.99 if paid within 30 days but \$44.99 if paid between 30 and 60 days, or stating the price as \$44.99 with a \$5 discount if paid within 30 days.<sup>3</sup>

21. First, the approach of raising the pricing to \$44.99 inclusive of 30 to 60 days credit is not used for competitive reasons. The objective of the carriers is to identify a unit of service that can carry the lower price, avoiding the need to explain the credit terms. Here the carriers rely on the consumers’ lack of complete information about all the costs of service and add to the asymmetry of information by keeping certain fees in the “other terms and conditions” category. Despite any claims to the contrary, it is in the

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<sup>2</sup> Hal R. Varian, *Microeconomic Analysis* (Norton, 1978), p. 231. [Emphasis in the original.]

<sup>3</sup> “Comments of Verizon Wireless,” FCC WT Docket No. 10-42 (April 7, 2010).



carriers' interest to maintain the condition where detailed information is not readily available. This phenomenon merited its own section in Scherer's classic industrial organization text from 1970.

Some of the most serious market performance problems in the contemporary American economy are due more to inadequate knowledge on the consumer's part than to structural imperfections of a traditional sort.<sup>4</sup>

22. There has been an overall trend toward lower prices in the cellular mobile telephone industry. This trend also applies to declines in average revenues per user (ARPU).<sup>5</sup> As a result there is no evidence that allowing state consumer protection statutes to apply to fees for late payment penalties or for service reconnection would somehow result in higher prices for consumers.

### III. INTERNATIONAL PRICE COMPARISONS

23. Voice telecommunications services, both fixed and mobile, are provided in virtually every country in the world. There is a long tradition of comparing the prices for these services across countries. Originally, when there was commonly a single monopoly telephone carrier in each country, that carrier's rates were used in the comparisons. As competition emerged, the comparison either focused on the prices of a single dominant carrier or on a weighted average of rates from several national or local carriers. There have been several approaches used in undertaking these international comparisons, but the purpose is to develop a reasonable approach allowing the comparison of services available to consumers in different countries.<sup>6</sup>

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<sup>4</sup> F. M. Scherer, "Consumer Information Programs" in *Industrial Market Structure and Economic Performance* (Rand McNally, 1970), p. 417ff.

<sup>5</sup> A recent study showing this trend is ABI Research, "Mobile Subscriber ARPU, Voice, Messaging, and Data Traffic Forecasts" (March 2010). Reported at: <http://www.abiresearch.com/press/1617-ARPU+Continue+To+Fall+Globally+As+Mobile+Voice+Usage+Nears+Saturation>.

<sup>6</sup> The classic reference is Bridger M. Mitchell, "The Cost of Telephone Service: An International Comparison of Rates in Major Countries," *Telecommunications Policy*, Vol. 7, Issue 1, March 1983, Pages 53-63.

24. One approach is to construct a “basket” of services and charges with fixed components. A well-known early example of this approach is the “Siemens basket” which calculated yearly totals based on one-tenth of the service initiation charge, twelve times the basic monthly service charge, and the price of 700 three-minute local calls and 200 three-minute toll calls.<sup>7</sup> Another approach is to allow the basket’s components to change across countries to reflect calling patterns and pricing plans. The Organization for Economic Cooperation and Development (OECD) baskets are examples of this approach, which they describe as follows:

The OECD mobile baskets examine the price of making a set basket of calls over the period of one year. The mobile call baskets include a pre-determined number of calls, SMS and MMS messages each year. The ratio of on-network and off-network calls is determined through discussions with operators. Operators also provide the OECD with data on SMS and MMS patterns.

Source: [http://www.oecd.org/document/5/0,3343,en\\_2649\\_34225\\_43877509\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/5/0,3343,en_2649_34225_43877509_1_1_1_1,00.html)

25. The OECD approach results in three baskets of mobile services, as shown in Exhibit 3:

Exhibit 3: OECD Mobile telecommunications service baskets

Volume	Calls	SMS	MMS	Total minutes*
Low user	360	396	8	529
Medium user	780	600	8	1368
High user	1680	660	12	2952

Source: [http://www.oecd.org/document/5/0,3343,en\\_2649\\_34225\\_43877509\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/5/0,3343,en_2649_34225_43877509_1_1_1_1,00.html) (notes omitted).

26. In both the Siemens basket and the OECD basket approaches, the only rates that are including in the pricing calculations relate to service initiation, monthly service, calls, messages (text and multimedia, if appropriate), and data usage. Any

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<sup>7</sup> Siemens, “Study on Worldwide Telephone Tariffs” (Munich, 1979) as cited in Mitchell, *op. cit.*

charges the carriers might have for late payment fees or service reconnection are not included.

27. In each of these international comparisons, the focus is on the rates charged to local consumers for telephone service, fixed or mobile. Some, such as the one by Mitchell, explicitly use the word “rate” to indicate their focus is on the charges for the components of telephone service. Others may use wording such as “prices,” but in each case it is clear that the relevant rates or prices are those associated with those components that are part of the monthly bill. In no case I have found an international comparison of rates that includes the fees for other terms and conditions in the set of rates that are the subject of the comparison.

#### **IV. PRICING COMPARISONS ACROSS PLATFORMS**

28. Over the past decade there has been an increase in inter-modal competition in communications. Cable television system operators have introduced both broadband services and traditional voice telephony. Similarly, the traditional wire-line local telephone companies have also offered broadband services and now wired video services. These services are available on a stand-alone basis and in various “bundles” of two or three services (as the so-called “triple-play” package). In some cases the bundles also include mobile telephone services.

29. The introduction of these competitive services, both individually and in bundles, has created a need for comparative shopping information. Market research firms obtain detailed information on the details of the wide variety of offerings and their prices. These market research firms make use of surveys, publicly-available information (such as company web sites), and reviews of monthly bills. These data are made available to industry participants and market researchers. The focus is on the services used by consumers and the amount paid for these services, and commonly the results are broken down by location, socio-economic group, and a variety of demographics.

30. The data collected and reported for the cable television industry include type of subscription (digital, HDTV, etc.), the “tier” (basic, expanded, premium), usage of on-demand services, and the amounts paid for these services. For traditional wired telephone service, the data include local and long-distance monthly usage, the long-distance carrier, and international calling details. For the wireless telephone industry, these data include the following: amount of monthly bill; brand of carrier; use of or purchase of specific services such as ring tones, text messaging, etc.; and payment plan (pre- or post-paid). These data often form the basis for conclusions concerning the relative pricing of the various product and service offerings in the communications markets. The focus is on the information that is relevant to competitive pricing and consumer decision-making. Late-payment fees and other similar fees are not included in these data sets. (These specifics are based on information provided by Scarborough Research, a joint venture of Arbitron and Nielsen. Website: <http://www.scarborough.com/index.php> )

31. I have used these data along with published pricing data in my research. For example, my 2006 report on the likely benefits from wired video competition presents average household monthly spending on cable television for each of the four Designated Market Areas in California.<sup>8</sup> These results are reproduced in Exhibit 4. Following general practice, the monthly price does not include any late fees, reconnection charges, or similar elements of terms and conditions

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<sup>8</sup> Yale M. Braunstein, “Expected Consumer Benefits from Wired Video Competition in California,” (April 2006). Available at: [http://people.ischool.berkeley.edu/~bigyale/cable/Video\\_comp\\_Apr\\_2006.pdf](http://people.ischool.berkeley.edu/~bigyale/cable/Video_comp_Apr_2006.pdf)

Exhibit 4

DMA Size and Cable Television Prices		
	Households	Average Cable TV Monthly Price
Los Angeles DMA	5,536,430	\$ 58.29
Sacramento/Stockton/Modesto DMA	1,345,820	\$ 53.41
San Diego DMA	1,026,160	\$ 49.54
San Francisco DMA	2,355,740	\$ 57.38
Four DMAs overall (a)	10,264,150	\$ 56.40
California state total (b)	11,502,870	

Notes:

(a) Data are from 2005. Source: Nielsen Media Research Local Universe Estimates

(b) Data are from 2000. Source: California Quick Facts from the US Census Bureau

## V. RATES AND PRICES USED IN ECONOMETRIC STUDIES

32. In his declaration, Dr. Robert Harris refers to the “econometric analysis by Professor Jerry Hausman that found that ‘regulated states have cellular prices that are 15% higher’ than prices on states that do not regulate cellular rates.”<sup>9</sup> The Hausman results, based on his earlier work in 1995, compared “monthly service prices in 1994 . . . for the least expensive plan for average usage of 160 minutes per month (80 percent peak) for up to a 1-year contract.”<sup>10</sup> The focus here was entirely on the monthly subscription fee and the per-minute rate, not on the charges for late fees or other terms and conditions.

33. Hausman’s approach is consistent with the earlier studies of the effects of regulation on rates. This body of work dates back at least to George Stigler and Clair Friedland’s “What Can Regulators Regulate? The Case of Electricity” from 1962.<sup>11</sup> One might also include my study of the effects of state regulation of cable television from

<sup>9</sup> Declaration of Robert G. Harris, WT Docket No. 10-42, Federal Communications Commission, par. 8, citing Jerry Hausman, “Chapter 13: Mobile Telephone,” in M. Cave, S. Majourndar & I. Vogelsang, *Handbook of Telecommunications Economics*, Vol. 1 (North-Holland, 2002).

<sup>10</sup> Hausman, op. cit., p. 591, citing his “The Cost of Cellular Telephone Regulation,” (MIT working paper) and “State Regulation of Cellular prices,” (*Wireless Communications Forum* 3, pp. 61-68).

<sup>11</sup> George J. Stigler and Claire Friedland, “What Can Regulators Regulate? The Case of Electricity,” *Journal of Law and Economics*, vol. 5 (October 1962).

1979 in this analytical tradition.<sup>12</sup> In each of these studies the focus was on the rates paid by the consumers for service, generally on a monthly basis. Stigler and Friedland focus on average revenue per kilowatt-hour. My study of cable television systems used the monthly subscription fee for the first television set, based on data obtained from the “Services Volume” of *Television Factbook*. The “rates” at issue are the charges for monthly connections and usage (if any), and in the cable television study it is clear that any state limits on other fees and conditions did not affect either the classification into regulated and unregulated states or the construction of the rate data that were used.

34. My research assistant and I conducted a study of the past ten years of econometric studies of the demand for mobile telephone services. This paragraph describes the process we used to select the studies, and the next paragraph summarizes our findings. Before I go into the details of the selection process, I want to stress that this was not meant to be a random sample or to discover the universe of relevant articles. We used only two major online search engines with bibliographic focus, and it is not possible to know their coverage of the relevant literature. Furthermore, it would be impossible in any case to “prove” a specific hypothesis about the content of all relevant articles unless we could be certain we had access to the universe. Nevertheless, I believe our findings provide a valid indication of the focus of the research literature. We selected all the English-language studies listed in the *Google Scholar* and *Science Direct* databases for the past ten years. We used search terms that included “mobile telephone demand analysis,” “mobile telephone price,” and similar phrases. (We obtained the *Science Direct* citations in two ways. The first was in direct response to our entering search terms. The other was from selecting articles that appeared in a sidebar while examining one of those in the first group. Both groups are identified as coming from *Science Direct* in the table.) We also looked any article that was referenced by those that we found with

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<sup>12</sup> Yale M. Braunstein, “Economic Effects of State Regulation of Cable Television,” in H. S. Dordick, ed., *Proceedings of the Sixth Annual Telecommunications Policy Research Conference* (Lexington, 1979).

the search engines and looked promising from an inspection of its title or description.

The 26 articles that we selected are in Appendix C.

35. Most of the studies used standard components of the tariff-monthly fee, per minute or per message fees, etc., as their measures of prices or rates. Two of the studies, Grajek and Kretschmer [2009] and Farooq, *et al.* [2010], used revenue per minute, somewhat similar to the Stigler and Friedland approach. [Full citations given in Appendix C.] Grajek and Kretschmer used a price variable calculated from “revenue from services,” which we believe excludes late fees, etc. However, this is not clear in the article. Farooq, *et al.*, explicitly state they used revenues from connections and calls only, with no mention of any revenues from late fees or similar terms and conditions. Their exact wording is “the average call rate is used, which has been constructed by dividing the total revenue for each tariff by total number of outgoing minutes of that tariff.” The result is that at least 24 (and probably all) of the 26 studies that we found and analyzed did not include late fees, reconnection fees, or similar items in their demand analyses.

36. The vast preponderance of econometric studies explicitly use prices or rates that exclude the fees associated with late payments, service reconnection, and other terms and conditions. The only econometric studies of demand for mobile telephone services that we found that might conceivably include such fees are those that look at average revenue per subscriber. We could find no theoretical justification presented in these (or any of the other) articles that argued for inclusion of the fees associated with the terms and conditions as factors that influenced consumer demand. From this I conclude that the accepted econometric approach in mobile telephone demand studies is to look at the prices or rates that are associated with the various services desired by consumers, namely the rates charged for connections, voice calls, text messages, and so on.

## VI. CONCLUSION

37. The *Federal Communications Act* states that the Commission should “encourage competition” in the provision of mobile services.<sup>13</sup> Competition requires that consumers understand the nature of the goods or services that they are acquiring and the prices that they pay for those goods or services. In the language of mobile telephone services, these prices are the “rates” charged for the monthly connection fee and for the voice, messaging, and data services provided by the carriers. This usage is consistent in the four areas examined in this statement: (a) wireless pricing plans as advertised to consumers, (b) international pricing comparisons, (c) pricing comparisons across platforms, and (d) rates and prices used in econometric studies. In none of these cases does the term “rates” apply to late fees and reconnection fees. These last two items are components of the “other terms and conditions” associated with mobile telephony. While both categories are denominated in dollars, the carriers can not simply move the various charges from one category to another and neither consumers nor market analysis firms view them as equivalent.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct. Executed this 7th day of May, 2010, at Berkeley, California.

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YALE M. BRAUNSTEIN

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<sup>13</sup> 47 U.S.C. Sec. 332(a)(3).



## VI. CONCLUSION

37. The *Federal Communications Act* states that the Commission should “encourage competition” in the provision of mobile services.<sup>13</sup> Competition requires that consumers understand the nature of the goods or services that they are acquiring and the prices that they pay for those goods or services. In the language of mobile telephone services, these prices are the “rates” charged for the monthly connection fee and for the voice, messaging, and data services provided by the carriers. This usage is consistent in the four areas examined in this statement: (a) wireless pricing plans as advertised to consumers, (b) international pricing comparisons, (c) pricing comparisons across platforms, and (d) rates and prices used in econometric studies. In none of these cases does the term “rates” apply to late fees and reconnection fees. These last two items are components of the “other terms and conditions” associated with mobile telephony. While both categories are denominated in dollars, the carriers can not simply move the various charges from one category to another and neither consumers nor market analysis firms view them as equivalent.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct. Executed this 7th day of May, 2010, at Berkeley, California.

  
YALE M. BRAUNSTEIN

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<sup>13</sup> 47 U.S.C. Sec. 332(a)(3).

(1) **Appendix A – Selected Previous Expert Reports & Testimony (selected list)**

**Valuation cases:**

<u>Case/Client</u>	<u>Year</u>	<u>Brief Description</u>	<u>Role</u>
<u>Joint Sports Claimants</u>	1980	Copyright Royalty Tribunal	Testimony
<u>IBM tax case</u>	1985/1991	Valuation of IP from acquisition of Rolm (Sec. 338 of Tax Code)	Co-authored report
<u>Major League Baseball</u>	1982	Canadian Copyright Council	Testimony
<u>Stephen v. Enterprise Rent-a-Car</u>	1990	Illegal pricing of CDW (Class action)	Wrote report; deposed
<u>IRS tax shelter cases (subject to NDA)</u>	1994-on	Valuation of IP in tax shelters	Wrote report
<u>Stein v. PacBell</u>	2003	DSL competition	Wrote report; deposed
<b>Other major testimony or advisory work (not including traditional consulting):</b>			
<u>Israel Ministry of Communications</u>	1994 1996	Lead advisor, second cellular licenses Lead advisor, second & third international carriers	
<u>Swedish National Telecommunications Regulatory Agency (PTS)</u>	1995	Advisor on PCS licensing	
<u>Orange v. ODTR &amp; Meteor</u>	1999	Irish cellular license	Testimony
<u>California ISP Assn. v. Pacific Bell</u>	2001	California PUC Case No. 01-07-027	Declaration
<u>AT&amp;T SBC Merger</u>	2005	California PUC Appl. A05-02-027	Expert report for interveners ( <u>Community Technology Foundation of California</u> )
<u>CRTC Forbearance from regulation of local exchange services</u>	2005-06	CRTC Public Notice 2005-2	Lead advisor, <u>Commission and staff</u>
<u>Cable &amp; Wireless Guernsey Ltd. v. Office of Utility Regulation</u>	2006-7	Guernsey 3G license	Expert report
<u>RealNetworks v. VeriSign</u>	2009	SMS alliance agreement	Expert report & testimony

## (2) Appendix B – Current Resume

### YALE MITCHELL BRAUNSTEIN

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(510) 843-0891  
e-mail: yale@ischool.berkeley.edu

Date of Birth: January 12, 1945  
Place of Birth: Philadelphia, PA  
Married, one child

### EMPLOYMENT

Current position	Professor, School of Information University of California, Berkeley Originally appointed Associate Professor in School of Library and Information Studies, 1983; additional appointment to Graduate Group in Health Services and Policy Analysis, 1991.
1977 to 1983	Assistant Professor of Economics Brandeis University
1974 to 1977	Assistant Professor of Economics Graduate School of Arts and Sciences New York University

### EDUCATION

Ph.D.	Economics	Stanford University	1975
M.A.	Economics	Stanford University	1968
B.S.	Economics	Rensselaer Polytechnic Institute	1966

### PUBLICATIONS AND ARTICLES

Dissertation: Dynamics of Inter- and Intra-Media Competition:  
Effects of Technological and Demographic Change  
(Advisor: James N. Rosse)

#### Articles:

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“Empirical Study of Scale Economies and Production Complementarity: The Case of Journal Publication” (with W. J. Baumol); *Journal of Political Economy*, Vol. 85, 1037-1048 (October 1977).

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“Economic Considerations of Federal Information Policies,” in C. McClure, P. Hernon, and H. Relyea, eds., *United States Government Information Policies: Views and Perspectives* (Norwood, NJ: Ablex, 1989).

“Resolving Conflicts between Information Ownership and Intellectual Freedom,” *Library Trends*, Vol. 39, No. 1 & 2, 126-131 (1990).

“Emergence of the Information Sector and the Future of Information Work in the Asia/Pacific Region” (with A. Head); in *Information Linkages Over Space and Time* (Honolulu: Univ. of Hawaii, 1991).

“Emergence of the Information Sector and the Future of Information Work in Central and Eastern Europe” (with A. Head); in *Proceedings of Information Economy and Policy Conference* (Budapest: John von Neumann Society, 1991).

“A Composite Cost Function for Multiproduct Firms with an Application to Economies of Scope in Banking” (with L. Pulley); *Review of Economics and Statistics*, Vol. 74, No. 2, 221-230 (1992).

“Application of Game Theory to the U.S.-Japan Trade Friction in Telecommunications” (with M. Jussawalla); in M. Jussawalla, ed., *United States-Japan Trade in Telecommunications: Conflict and Compromise* (Westport, CT: Greenwood Press, 1993).

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“Reviewing 3G ‘Optimism’: Services, Segments and Stages of Reality” (with Kas Kalba), *Proceedings of the 8<sup>th</sup> International Workshop on Mobile Multimedia Communications*, pp. 173-78 (Munich, October 2003).

“Dissemination of Content Reutilization Practices in the German and US Book Publishing Industry” (with A. Benlian, C. Grau, and T. Hess), *Journal of Media Business Studies (JOMBS)*, Vol. 3, No. 2, pp 41-61 (2006).

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“Estimating the Economic Benefits from Increased Competition in Wired Video Delivery,” *Proceedings of the Pacific Telecommunication Conference*, 2008.

“The Evolution of Text Messaging: From a Carrier-specific to an Open-connectivity International Service,” *Proceedings of the Pacific Telecommunication Conference*, 2010.

#### SELECTED REPORTS, BOOK REVIEWS, ETC.

“Public Policy and Research on the Economics of Information Transfer,” *Proceedings of the American Society for Information Science*, Vol. 13, 1976. (Presented at ASIS meeting, 1976).

“The Role of Transactions Costs in the Design of Royalty Pricing Schemes for STI” (with J. A. Ordoover) and “The Role of Copyright Protection and Optimal Pricing in Computerized STI Systems” in R. G. Saltman, *Copyright in Computer-readable Works: Policy Impacts of Technological Change* (National Bureau of Standards Special Publication 500-17), 1977.

“Manual of Pricing and Cost Determination for Organizations Engaged in Dissemination of Knowledge” (with W. J. Baumol, D. M. Fischer, and J. A. Ordover), report to National Science Foundation Division of Science Information, 1977.

“Economics of Property Rights as Applied to Computer Software and Data Bases” (with D. M. Fischer, J. A. Ordover, and W. J. Baumol), report to National Commission on New Technological Uses of Copyrighted Works (CONTU), 1977. (Available from NTIS.) Excerpt reprinted in G. P. Bush & R. H. Dreyfuss, ed., *Technology & Copyright*, (Lomond, 1979).

Review of *Deregulation of Cable Television* (P. W. MacAvoy, ed.), *Federal Communications Law Journal*, Vol. 30, No. 1 (Winter 1977).

“The Impact of Firm Size and Subscriber Scale on Cable Television Services” (with K. Kalba), Kalba Bowen Associates report, 1978. Submission to CRTC, “Application for control of Canadian Cablesystems” and to FTC Inquiry into Concentration in the Mass Media.

“Recent Trends in Cable Television Related to the Prospects for New Television Networks,” report to FCC Network Inquiry Special Staff, 1979.

“The Functioning of Information Markets,” Chapter IV in J. Yurow, ed., *Issues in Information Policy* (National Telecommunications and Information Administration Special Publication 80-9), 1981.

“Library Funding and Economics,” chapter in *Rethinking the Library in the Information Age* (U. S. Department of Education, Office of Library Programs, 1988). Later version in *IFLA Journal*, Vol. 15, No. 4, 289-298 (1989).

Review of *The Economics of Information Networks* (C. Antonelli, ed.), *Information Economics and Policy*, Vol. 5 (No. 4), pp. 357-360 (December 1993).

“Strategies of Telecom Common Carriers for Expanding Globalization.” (Presented at Pacific Telecommunication Conference, 1998.)

“Health Information on the Internet: Economics, Regulation, Policy & Ethics.” Lecture published by University of Pittsburgh “Epidemiology, the Internet and Global Health Supercourse” at: <http://www.pitt.edu/~super1/lecture/lec1481/index.htm> (August 2000).

“California’s Internet Service Providers View Reciprocal Compensation, Affordable Internet Access & Rural Internet Access,” report for CISPA (December 2000); available at: <http://www.ischool.berkeley.edu/~bigyale/ISPsurvey.html>

“Market Power and Price Increases in the DSL Market” (July 2001); available at: <http://www.sims.berkeley.edu/~bigyale/dsl.html>

“Broadband Industry Structure: Policy, Pricing and Penetration,” presentation at the Wireless Internet Conference, sponsored by the Instituto Superiore Mario Boella, Torino, Italy (June 2002), and Pacific Telecommunications Conference (January 2003).

Review of *Cost Proxy Models and Telecommunications Policy* (F. Gasmi, et al.), *Information Economics and Policy*, Vol. 16 (No. 2), pp. 311-313 (June 2004).

Review of *The Economic Structure of Intellectual Property Law* (W. M. Landes & R. A. Posner), *Jour. of Economic Literature*, Vol. 42, pp 1147-49 (June 2004).

“Expected Consumer Benefits from Wired Video Competition in California” (April 2006); available at:  
[http://www.ischool.berkeley.edu/~bigyale/cable/Video\\_comp\\_Apr\\_2006.pdf](http://www.ischool.berkeley.edu/~bigyale/cable/Video_comp_Apr_2006.pdf)

“Regulatory Response to Telecom-Video-Data Convergence, “ presentation at CITRIS Research Exchange, UC Berkeley (April 2008); available at: <http://www.citris-uc.org/>

*Give Us the Information Already: A working primer on the role of information and information failures in the ongoing financial crisis and the proposed bailout plans.* Class project (Spring 2009); available at:  
[http://people.ischool.berkeley.edu/~bigyale/financial\\_crisis.html](http://people.ischool.berkeley.edu/~bigyale/financial_crisis.html)

#### TEACHING EXPERIENCE (PARTIAL LIST)

Economics of Information	Information in Society
Information Policy	Systems Analysis
Telecommunications and Information Industries: Economics & Policy	Financial Management
Management of Information Technology	Legal Regulation of Economic Activity
Industrial Organization	Ethics of the Internet
Health Information Systems	
Realizing Digital Convergence	

#### MEMBERSHIP IN PROFESSIONAL SOCIETIES

American Economics Association	American Society for Information Science
Pacific Telecommunications Council	

#### OTHER PROFESSIONAL & CIVIC ACTIVITIES (SELECTED LIST)

Session chair, Pacific Telecommunications Conference, January 2010

Panel member and chair, Research Roundtables 1 & 2, Pacific Telecommunications Conference, January 2008

Panel member, Policy & Regulator’s Roundtable (Keynote Session), Pacific Telecommunications Conference, January 2007

Member of the Networking and Information Technology Technical Advisory Group of the President’s Council of Advisors on Science and Technology (PCAST; appointed 2006)

Invited keynote address, Center for Digital Technology & Management graduation exercises (Munich, June 2004)

Program committee (also session chair, panelist, presenter), 8<sup>th</sup> International Workshop on Mobile Multimedia Communications (MoMuC 2003), Munich.

Guest Professor, Department of Informatics, FH Anhalt-Koethen (Anhalt University of Applied Sciences), Germany, 1999-2003; lectures on information policy, knowledge management.



Panel chair and presentation on economic issues, U.S. Patent and Trademark Office  
Conference, Washington, April 1998.  
Conference Organizer, Ethics of the Internet, Berkeley, April & November 1995  
Visiting Scholar, Wuhan University, Wuhan, China; October 1993.  
Visiting Fellow, East-West Center, Honolulu, HI; July 1992.

### (3) Appendix C – Econometric Studies of Mobile Telephone Demand

Item #	Author	Title	Year	Price elements / Description	Project Description	Search Engine	Search terms	Source notes	Citation
1	Nokia	The Demand for Mobile Value Added Services Study of Smart Messaging Market Study	1999	Considers cost for individual SMS and content, but not fees		Google	demand study mobile service prices		Harald Gruber, An investment view of mobile telecommunications in the European Union, Telecommunications Policy, Volume 23, Issues 7-8, August 1999, Pages 521-538, ISSN 0308-5961, DOI: 10.1016/S0308-5961(99)00042-7.
2	Gruber	An investment view of mobile telecommunications in the European Union	1999	traiff = connection + subscription	looks at variables affecting mobile market			referenced by another paper	Ragbendra Jha, Sumit K. Majumdar, A matter of connections: OECD telecommunications sector productivity and the role of cellular technology diffusion, Information Economics and Policy, Volume 11, Issue 3, September 1999, Pages 243-269, ISSN 0167-6245, DOI: 10.1016/S0167-6245(99)00017-7.
3	Jha and Mujamdar	A matter of connections: OECD telecommunications sector productivity and the role of cellular technology diffusion	1999	tariffs				referenced by another paper	

4	Ahn and Lee	An econometric analysis of the demand for access to mobile telephone networks	1999	connection, monthly charge, 3 minute rate	Science Direct	mobile telephone price	Hyungtaik Ahn, Myeong-Ho Lee, An econometric analysis of the demand for access to mobile telephone networks, Information Economics and Policy, Volume 11, Issue 3, September 1999, Pages 297-305, ISSN 0167-6245, DOI: 10.1016/S0167-6245(99)00016-5.
5	Ros and Banerjee	Telecommunications privatization and tariff rebalancing: evidence from Latin America	2000	connection, monthly access, cost of 3 minute call at peak rate			Agustin J. Ros, Aniruddha Banerjee, Telecommunications privatization and tariff rebalancing: evidence from Latin America, Telecommunications Policy, Volume 24, Issue 3, April 2000, Pages 233-252, ISSN 0308-5961, DOI: 10.1016/S0308-5961(00)00013-6. referenced by another paper
6	Gans and King	Mobile Network Competition, Customer Ignorance and Fixed-to-Mobile Call Prices	2000	price per minute/call averages			Joshua S. Gans, Stephen P. King, Mobile network competition, customer ignorance and fixed-to-mobile call prices, Information Economics and Policy, Volume 12, Issue 4, December 2000, Pages 301-327, ISSN 0167-6245, DOI: 10.1016/S0167-6245(00)00007-X. referenced by another paper

7	Sung et al	Is a POTS Dispensable? Substitution Effects Between Mobile and Fixed Telephones in Korea	2001	connection charge	referenced by another paper	Sung, Nakil, Kim, Chang-Gum and Lee, Yong-Hun, Is a POTS Dispensable? Substitution Effects Between Mobile and Fixed Telephones in Korea (April 2000). Available at SSRN: <a href="http://ssrn.com/abstract=222288">http://ssrn.com/abstract=222288</a> 8 or doi:10.2139/ssrn.222288 Jae-Do Song, Jae-Cheol Kim, Is five too many? Simulation analysis of profitability and cost structure in the Korean mobile telephone industry, Telecommunications Policy, Volume 25, Issues 1-2, February 2001, Pages 101-123, ISSN 0308-5961, DOI: 10.1016/S0308- 5961(00)00076-8.
8	Song and Kim	Is five too many? Simulation analysis of profitability and cost structure in the Korean mobile telephone industry	2001	activation fee, the monthly fee, the airtime fee, interconnect revenue and roaming revenue, among others	Science Direct	Mark Rodini, Michael R. Ward, Glenn A. Woroch, Going mobile: substitutability between fixed and mobile access, Telecommunications Policy, Volume 27, Issues 5-6, Competition in Wireless: Spectrum, Service and Technology Wars, June-July 2003, Pages 457-476, ISSN 0308-5961, DOI: 10.1016/S0308- 5961(03)00010-7.
9	Rodini et al	Going Mobile: SUBSTITUTABILITY BETWEEN FIXED AND MOBILE ACCESS	2002	access and usage	referenced by another paper	

10	Madden & Coble-Neal	Economic determinants of global mobile telephony growth	2003	monthly mobile telephone subscription charge	comparison of fixed line and mobile telephony adoption/substitution	referenced by another paper	Gary Madden, Grant Coble-Neal, Economic determinants of global mobile telephony growth, Information Economics and Policy, Volume 16, Issue 4, December 2004, Pages 519-534, ISSN 0167-6245, DOI: 10.1016/j.infoecopol.2003.05.001.
11	Madden et al	A dynamic model of mobile telephony subscription incorporating a network effect	2004	monthly charge			Gary Madden, Grant Coble-Neal, Brian Dalzell, A dynamic model of mobile telephony subscription incorporating a network effect, Telecommunications Policy, Volume 28, Issue 2, Growth in mobile communications, March 2004, Pages 133-144, ISSN 0308-5961, DOI:10.1016/j.telpol.2003.12.002.
12	Huang	Estimating Demand for Cellular Phone Service under Nonlinear Pricing	2005	fixed subscription fee and unit price		demand study mobile service prices	Huang, Ching-I, "Estimating Demand for Cellular Phone Service under Nonlinear Pricing," MPRA Paper 6459, University Library of Munich, Germany, 2007.

13	Lee and Lee	Estimating consumer surplus in the mobile telecommunications market: The case of Korea	2006	access charge, call charge	Science Direct	mobile telephone price	Duk Hee Lee, Dong Hee Lee, Estimating consumer surplus in the mobile telecommunications market: The case of Korea, Telecommunications Policy, Volume 30, Issues 10-11, November-December 2006, Pages 605-621, ISSN 0308-5961, DOI: 10.1016/j.telpol.2006.09.003.
14	Alptekin et al	Estimating Spectrum Demand for the Cellular Services in the UK	2007	tariffs	Google	demand study mobile service prices	A Alptekin, P Levine, N Rickman, Estimating Spectrum Demand for the Cellular Services in the UK, 2007 Christopher Garbacz, Herbert G. Thompson Jr, Demand for telecommunication services in developing countries, Telecommunications Policy, Volume 31, Issue 5, June 2007, Pages 276-289, ISSN 0308-5961, DOI: 10.1016/j.telpol.2007.03.007.
15	Garbacz and Thompson	Demand for telecommunication services in developing countries	2007	monthly charge and connection charge	Google Scholar	demand analysis mobile telecommunications	German Coloma, The effect of the Telefonica-BellSouth merger on the Argentine cellular telephone market, Telecommunications Policy, Volume 31, Issues 8-9, September-October 2007, Pages 541-557, ISSN 0308-5961, DOI: 10.1016/j.telpol.2007.07.002.
16	Coloma	The effect of the Telefonica-BellSouth merger on the Argentine cellular telephone market	2007	model description just says "average prices charged" but earlier part of paper describes fixed monthly charge and charge per minute of use	Science Direct	mobile telephone price	

17	Stennek and Tanageras	Competition vs. Regulation in Mobile Telecommunications	2008	access and call prices			Stennek, Johan and Tangerås, Thomas, Competition vs. Regulation in Mobile Telecommunications (October 20, 2008). NET Institute Working Paper No. 08-09 . Available at SSRN: <a href="http://ssrn.com/abstract=1147677">http://ssrn.com/abstract=1147677</a>
18	Grzybowski and Pereira	The complementarity between calls and messages in mobile telephony	2008	price per call and price per text message	Science Direct	mobile telephone price	Lukasz Grzybowski, Pedro Pereira, The complementarity between calls and messages in mobile telephony, Information Economics and Policy, Volume 20, Issue 3, September 2008, Pages 279-287, ISSN 0167-6245, DOI: 10.1016/j.infoecopol.2008.06.005.
19	Cha et al	Managing and modeling the price reduction effect in mobile telecommunication traffic	2008	base charge, usage charge	Science Direct	mobile telephone price	Kyoung Cheon Cha, Duk Bin Jun, Amy R. Wilson, Young Sun Park, Managing and modeling the price reduction effect in mobile telecommunications traffic, Telecommunications Policy, Volume 32, Issue 7, August 2008, Pages 468-479, ISSN 0308-5961, DOI: 10.1016/j.telpol.2008.04.005.

20	Kim, et al	An Empirical Analysis of Mobile Voice and SMS service: A Structural Model	2009	rates for calls & sms, over-limit rates for calls & sms. No mention of fees	Google	demand study mobile service prices	Kim, Youngsoo, Telang, Rahul, Vogt, William B., Krishnan, Ramayya. An Empirical Analysis of Mobile Voice Service and SMS: A Structural Model, MANAGEMENT SCIENCE 56: 234-252, Published online before print February 12, 2010, DOI: 10.1287/mnsc.1090.1091.
21	Corrocher and Zirulia	<i>Me and you and everyone we know: An empirical analysis of local network effects in mobile communications</i>	2009	tariffs	Google Scholar	demand analysis mobile telecommunications	Nicoletta Corrocher, Lorenzo Zirulia. Me and you and everyone we know: An empirical analysis of local network effects in mobile communications, Telecommunications Policy, Volume 33, Issues 1-2, February-March 2009, Pages 68-79, ISSN 0308-5961, DOI: 10.1016/j.telpol.2008.10.003.
22	Grajek and Kretschmer	Usage and diffusion of cellular telephony, 1998–2004	2009	revenue divided by minutes	Science Direct		Michal Grajek, Tobias Kretschmer, Usage and diffusion of cellular telephony, 1998-2004, International Journal of Industrial Organization, Volume 27, Issue 2, March 2009, Pages 238-249, ISSN 0167-7187, DOI: 10.1016/j.ijindorg.2008.08.003.



23	Grzybowski and Pereira	The consumer loss of the minimum duration for mobile telephone calls	2009	cost per second (specifically says VAT not included)	Science Direct	mobile telephone price	Lukasz Grzybowski, Pedro Pereira, The consumer loss of the minimum duration for mobile telephone calls, Telecommunications Policy, Volume 33, Issues 3-4, April-May 2009, Pages 200-206, ISSN 0308-5961, DOI: 10.1016/j.telpol.2008.12.003. Brendan M. Cunningham, Peter J. Alexander, Adam Candebub, Network growth: Theory and evidence from the mobile telephone industry, Information Economics and Policy, Volume 22, Issue 1, Wireless Technologies, March 2010, Pages 91-102, ISSN 0167-6245, DOI: 10.1016/j.infoecopol.2009.11.005.
24	Cunningham et al	Network Growth: Theory and evidence from the mobile telephone industry	2009	termination, subscription, calling	Science Direct	mobile telephone price	Syed Umar Farooq, Muhammad Imran Ullah, Rureen Rahmani, The Analysis of Cellular Services and Estimating Fixed to Mobile Price Elasticities-A Case Study of United Kingdom, European Journal of Scientific Research ISSN 1450-216X Vol.40 No.3 (2010), pp.428-440
25	Farooq, et al	The Analysis of Cellular Services and Estimating Fixed to Mobile Price Elasticities-A Case Study of United Kingdom	2010	revenue (connection and call). No mention of fees	Google	demand study mobile service prices	

26	Ward and Woroch	The effect of prices on fixed and mobile telephone penetration: Using price subsidies as natural experiments	2010	monthly subscription	Science Direct	mobile telephone price	Michael R. Ward, Glenn A. Woroch, The effect of prices on fixed and mobile telephone penetration: Using price subsidies as natural experiments, Information Economics and Policy, Volume 22, Issue 1, Wireless Technologies, March 2010, Pages 18-32, ISSN 0167-6245, DOI: 10.1016/j.infoecopol.2009.12.0 01.
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